

Nonpenetrating trauma resulting in hemopericardium presenting as syncope

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ABSTRACT

Hemopericardium is a life-threatening condition that needs to be treated promptly to prevent serious complications. It typically results from penetrating trauma directly into the pericardial sac resulting in cardiac tamponade and death if not promptly treated. High clinical suspicion should prompt further workup even in the absence of significant injury. We present a case of a 38-year-old man who presented with blunt force trauma from a rock while mowing the lawn that resulted in syncope and hemopericardium.

KEYWORDS Hemopericardium; pericardial effusion; syncope

Hemopericardium is a life-threatening condition that can result from trauma, iatrogenic injury, myocardial infarction, aortic dissection, anticoagulation, and other causes.^{1,2} It is a rare complication of nonpenetrating blunt chest trauma.³ Syncope as the presenting symptom of hemopericardium in the absence of cardiac tamponade is even more rare.³ Such was the case in the patient described herein.

CASE PRESENTATION

A 38-year-old man without significant medical history presented to the hospital with syncope. He was mowing his lawn when a small rock hit him on the right anterior chest. Immediately after, he developed chest pain, dyspnea, diaphoresis, and lightheadedness that then progressed to a syncopal episode, which lasted approximately 2 minutes with spontaneous resolution. He noted severe headache, nausea, and “spitting up small amounts of blood.”

Vital signs were within normal limits (heart rate 87 beats/min, blood pressure 102/69 mm Hg). Laboratory results were also unremarkable, including a troponin of <0.04 ng/mL. An electrocardiogram showed normal sinus rhythm. Computed tomography of the chest revealed a moderate amount of fluid within the pericardial sac and a small amount of fluid surrounding the ascending aorta and anterior mediastinum (*Figure 1*). A moderate amount of fluid

was noted on the anteromedial aspect of the right pectoralis major muscle reflecting a hematoma. A transthoracic echocardiogram showed moderate effusion with hematoma over the inferior surface of the heart with mild right ventricular enlargement consistent with contusion.

Given the hemodynamic stability of the patient, it was decided to manage him conservatively and monitor for expanding hemopericardium with serial echocardiograms. A repeat echocardiogram 3 days later showed a stable moderate-sized hemopericardium. Subsequent follow-up 3 months after the initial blunt force trauma showed resolution of the hemopericardium.

DISCUSSION

Blunt cardiac injury is the most common type of cardiac trauma resulting from motor vehicle accidents (50%), pedestrian-vehicle collisions (35%), motorcycle crash (9%), and falls (6%).^{1,4} Usually these injuries are associated with thoracic injuries such as rib fractures, sternal fracture, pneumothorax, hemothorax, or lung contusions, which may precipitate cardiac injury.¹

Nonpenetrating chest trauma resulting in hemopericardium is an uncommon cause of syncope.¹ Hemopericardium may be caused by cardiac rupture or vascular damage resulting in blood accumulation in the pericardial sac.³ Usually hemopericardium will result in cardiac tamponade from

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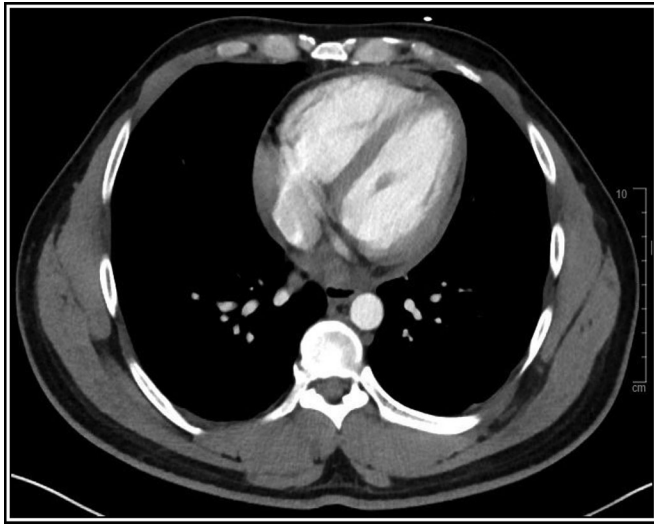


Figure 1. Axial computed tomography showing a moderate amount of intermediate to high intensity fluid present within the pericardial sac.

blood accumulation in the pericardium. However, a few select cases will result in cardiac tamponade over a significant period of time, termed “delayed hemopericardium” due to a “small leak” that may not become clinically apparent until accumulation of blood products reaches a critical stage.²

Cardiac trauma may be easily overlooked in the presence of other thoracic injuries. However, chest pain, congestive heart failure, pulmonary edema, pericardial friction rub, or new cardiac murmur should prompt cardiac evaluation.^{1,4} An electrocardiogram should be performed on all suspected cardiac injuries, as abnormal findings can signify considerable

cardiac injury.^{1,4} Cardiac troponin levels can be useful to risk-stratify individuals with elevated troponin levels, an indicator of the need for hospitalization in the setting of suspected cardiac injury.^{1,4} Transthoracic echocardiogram is the primary screening tool, as it is noninvasive and can evaluate cardiac structures and proximal aortic injuries.^{1,4} Thoracic computed tomography is also a useful diagnostic imaging tool as it can assess the entire thoracic cavity and is the preferred imaging study in hemodynamically stable patients.¹

In our case, it is unclear what caused the patient’s syncope episode, but it could be due to direct stunning of the heart from blunt trauma resulting in arrhythmia from the initial impact of the rock. Regardless, clinicians should be suspicious of cardiac injury even in minor injury in the setting of new onset of symptoms.

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